10-year outcome of SLA implants in the edentulous maxilla

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Introduction

As implant therapy has progressed, implant treatment options have expanded and the number of patients receiving implants has increased substantially in recent years. Implant innovations have also meant that new and more advanced implant systems and surfaces have entered the market. In turn, this has meant that longer-term data for implants has become increasingly important.

The SLA surface was introduced in 1997, and has widely been considered the gold standard in surface technology. Since then, many studies, including randomized clinical trials, have been performed. Although many of these trials give data over long periods (e.g. 5 years and over), there are no published 10-year follow-up data on SLA-surfaced implants and only few data are available on other (competitive) surfaces which are still on the market. The aim of this study, therefore, was to evaluate and compare the long-term outcomes of two different loading protocols for SLA implants.

Materials and Methods

This randomized, controlled study enrolled 24 patients (8 men and 16 women) with an edentulous maxilla. The patients received a total of 142 SLA-surfaced implants, loaded with full-arch prostheses either early (within 14 days; test group: 95 implants) or delayed (control group: 47 implants). Radiographic examination was performed at prosthesis placement, 6 months and 1, 2, 3, 5 and 10 years; prosthesis placement was the baseline measurement.

Results

One-, three- and five-year data from this study have previously been reported.\(^1\)\(^-\)\(^3\)

A patient had severe/aggressive periodontitis and had only three implants still in place at the 5-year evaluation; this patient dropped out before the 10-year evaluation. A total of seven implants were lost between the baseline and 5-year time points, and no further implants were lost between 5 and 10 years. Considering implant losses, the implant survival rate was 95.1%. If implants of unknown status were also considered lost (i.e. one drop-out patient with three implants), the implant survival rate was 93%. The prosthesis survival rate was 96%. In addition, patient satisfaction was reported to be high.

Mean marginal bone change in the test group after 5 years and 10 years was \(-0.8 \pm 1.2\) and \(-1.1 \pm 0.9\) mm, respectively. Mean marginal bone change in the control group was \(-0.3 \pm 1.0\) and \(-0.7 \pm 1.3\) mm at the same time points, respectively. There was therefore no significant bone loss in either group between 5 and 10 years, and the difference in bone loss between the groups at 10 years was not significant (Fig. 1).

![Fig. 1: Difference in mean marginal bone change from 5 to 10 years](image-url)  
ns: non significant
There was a total of 70 technical prosthesis complications, 68 of which were resin-related (39 in the test group and 29 in the control group); only two complications were metal-related (both in the test group). No abutment fractures occurred, indicating the reliability of the implant prosthesis components.

Of the 84 implants available for clinical examination at 10 years, the majority (67.9%) had a sulcus bleeding index (SBI) of 1 (isolated bleeding), and most had a plaque index (PI) of 1 (28.6%) or 2 (39.3%); no implants had a PI or SBI of 3. The mean implant stability quotient (ISQ), measured by resonance frequency analysis, was 57.15 (buccal-palatal) and 67.14 (mesial-distal).

**Conclusions**
- No implants were lost between 5 and 10 years
- No statistically significant bone loss occurred between 5 and 10 years
- Prosthesis survival was high (96%)
- Prosthetic complications were predominantly resin-related
- Reliability of the implant components was demonstrated in patients
- No signs of peri-implantitis were noted at 10 years (except in one patient with severe aggressive periodontitis)
- Patient satisfaction was high


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